AMENDMENTS TO THE CLAIMS

Claims 1-50 are pending in the instant application. Claims 7-13, 15, 21-27, 30-34, 38-48, and 50 are rejected. Claims 14, 28-29, 35-37, and 49 have been objected to.

Claims 7, 40, and 42-44 have been amended. New claims 51-57 have been added. Claims 1-6, 14, 16-20, 28-29, 35-37, and 49 have been cancelled. The Applicant requests reconsideration of the claims in view of the following amendments reflected in the listing of claims.

Listing of claims:

1. - 6. (Cancelled)

7. (Currently Amended) A video scaler, comprising:

an input for receiving a video image;

clock-selection circuitry that receives a video input clock and a display output clock and selects one of the video input clock and the display output clock for upscaling and one of the video input clock and the display output clock for downscaling of the video image;

a scaler engine capable of both downscaling the video image to generate a first scaled video image and upscaling the video image to generate a second

scaled video image, the scaler engine using [[a]]the clock selected by the clock-selection circuitry~~between a video input clock and a display output clock;~~

a memory capable of storing the video image or the first scaled video image; and

means for determining whether the video image is to be downscaled or upscaled.

8. (Previously Presented) The video scaler of claim 7, comprising:

first means capable of receiving the video image to be upscaled from the input, receiving the first scaled video image from the scaler engine, and providing the video image to be upscaled or the first scaled video image to the memory;

second means capable of receiving the video image to be downscaled from the input, receiving the video image to be upscaled from the memory, and providing the video image to be downscaled or the video image to be upscaled to the scaler engine; and

third means capable of receiving the first scaled video image from the memory, receiving the second scaled video image from the scaler engine, and outputting either the first scaled video image or the second scaled video image.

9. (Previously Presented) The video scaler of claim 8, comprising fourth means capable of receiving and selecting between a digital video image and a

digitized analog video image, and the fourth means outputs the selected one of the digital video image and the digitized analog video image as the video image.

10. (Original) The video scaler of claim 7, wherein the scaler engine downscales the video image using the video input clock.

11. (Original) The video scaler of claim 7, wherein the scaler engine upscales the video image using the display output clock.

12. (Previously Presented) The video scaler of claim 7, comprising a plurality of line buffers for providing the video image to the input.

13. (Previously Presented) The video scaler of claim 7, wherein the scaler engine comprises a horizontal scaler and a vertical scaler.

14. (Cancelled)

15. (Original) The video scaler of claim 7, wherein the scaler engine is a single physical device that is logically in both an upscale path and a downscale path of the video image.

16. – 20. (Cancelled)

21. (Previously Presented) A method for processing video data, the method comprising:

receiving a video image by a video scaling engine;

determining whether the video scaling engine requires less memory space to scale the video image before writing the video image to memory or after reading the video image from the memory; and

scaling the received video image based on the determination.

22. (Previously Presented) The method according to claim 21, comprising:

if the video scaling engine requires less memory space to scale the video image before writing the video image to the memory:

a) scaling the video image in the video scaling engine using a video input clock of the video scaling engine to generate a first scaled video image;

b) writing the first scaled video image to the memory;

c) reading the first scaled video image from the memory; and

d) outputting the first scaled video image.

23. (Previously Presented) The method according to claim 22, comprising:

if the video scaling engine requires less memory space to scale the video image after reading the video image from the memory:

e) writing the video image to the memory prior to scaling;

f) reading the video image from the memory;

g) scaling the video image in the video scaling engine using a display output clock of the video scaling engine to generate a second scaled video image; and

h) outputting the second scaled video image.

24. (Previously Presented) The method of claim 21, wherein scaling the video image comprises scaling the video image up or down, and horizontally or vertically.

25. (Previously Presented) The method of claim 22, wherein the first scaled video image is a downscaled video image.

26. (Previously Presented) The method of claim 23, wherein the second scaled video image is an upscaled video image.

27. (Previously Presented) The method of claim 21, wherein the determining comprises determining whether the video image is to be downscaled or upscaled.

28. – 29. (Cancelled)

30. (Previously Presented) A method for processing video data, the method comprising:

receiving a video image by a video scaling engine;

determining whether the video scaling engine requires less memory bandwidth to scale the video image before writing the video image to memory or after reading the video image from the memory; and

scaling the received video image based on the determination.

31. (Previously Presented) The method according to claim 30, comprising:

if the video scaling engine requires less memory bandwidth to scale the video image before writing the video image to the memory:

a) scaling the video image in the video scaling engine using a video input clock of the video scaling engine to generate a first scaled video image;

b) writing the first scaled video image to the memory;

c) reading the first scaled video image from the memory; and

d) outputting the first scaled video image.

32. (Previously Presented) The method according to claim 31, comprising:

if the video scaling engine requires less memory bandwidth to scale the video image after reading the video image from the memory:

e) writing the video image to the memory prior to scaling;

f) reading the video image from the memory;

g) scaling the video image in the video scaling engine using a display output clock of the video scaling engine to generate a second scaled video image; and

h) outputting the second scaled video image.

33. (Previously Presented) The method of claim 30, wherein the determining comprises determining whether the video image is to be downscaled or upscaled.

34. (Previously Presented) The method of claim 31, wherein scaling the video image prior to storing it in the memory comprises downscaling the video image.

35. – 37. (Cancelled)

38. (Previously Presented) The method of claim 31, wherein the first scaled video image is a downscaled video image.

39. (Previously Presented) The method of claim 32, wherein the second scaled video image is an upscaled video image.

40. (Currently Amended) A video scaler, comprising:

clock-selection circuitry that receives a video input clock and a display output clock and selects one of the video input clock and the display output clock for upscaling and one of the video input clock and the display output clock for downscaling of a video image

a scaler engine capable of both downscaling [[a]]the video image to generate a first scaled video image and upscaling the video image to generate a second scaled video image, the scaler engine using [[a]]the clock selected by the clock-selection circuitry~~between a video input clock and a display output clock~~, and the video image received via an input of the video scaler;

a memory capable of storing the video image or the first scaled video image; and

one or both of circuitry and/or code that determines whether the video image is to be downscaled or upscaled.

41. (Previously Presented) The video scaler of claim 40, wherein said one or both of said circuitry and/or code receives the video image to be upscaled from the input, receives the first scaled video image from the scaler engine, and provides the video image to be upscaled or the first scaled video image to the memory.

42. (Currently Amended) The video scaler of claim 40, wherein said one or both of said circuitry and/or code receives the video image to be downscaled from the input, receives the video image to be upscaled from the memory, and provides the video image to be downscaled or the video image to be upscaled to the scaler engine.

43. (Currently Amended) The video scaler of claim 40, wherein said one or both of said circuitry and/or code receives the first scaled video image from the memory, receives the second scaled video image from the scaler engine, and outputs either the first scaled video image or the second scaled video image.

44. (Currently Amended) The video scaler of claim 40, wherein said one or both of said circuitry and/or code receives and selects between a digital video image and a digitized analog video image, said at least one circuitry outputs the

selected one of the digital video image and the digitized analog video image as the video image.

45. (Previously Presented) The video scaler of claim 40, wherein the scaler engine downscales the video image using the video input clock.

46. (Previously Presented) The video scaler of claim 40, wherein the scaler engine upscales the video image using the display output clock.

47. (Previously Presented) The video scaler of claim 40, comprising a plurality of line buffers for providing the video image to the input.

48. (Previously Presented) The video scaler of claim 40, wherein the scaler engine comprises a horizontal scaler and a vertical scaler.

49. (Cancelled)

50. (Previously Presented) The video scaler of claim 40, wherein the scaler engine is a single physical device that is logically in both an upscale path and a downscale path of the video image.

51. (New) A video scaler, comprising:

an input for receiving a video image;

a scaler engine capable of both downscaling the video image to generate a first scaled video image and upscaling the video image to generate a second scaled video image, the scaler engine using a clock selected between a video input clock and a display output clock;

a memory capable of storing the video image or the first scaled video image; and

means for determining whether the video image is to be downscaled or upscaled, wherein the scaler engine comprises a horizontal scaler and a vertical scaler, and wherein one or both of the horizontal scaler and the vertical scaler comprises a programmable filter.

52. (New) A method for processing video data, the method comprising:

receiving a video image by a video scaling engine;

determining whether the video scaling engine requires less memory space to scale the video image before writing the video image to memory or after reading the video image from the memory;

scaling the received video image based on the determination; and

if the video scaling engine requires less memory space to scale the video image before writing the video image to the memory:

scaling the video image in the video scaling engine using a video input clock of the video scaling engine to generate a first scaled video image;

writing the first scaled video image to the memory;

reading the first scaled video image from the memory;

outputting the first scaled video image; and

blending the first scaled video image with a graphics image to generate a blended video and graphics image.

53. (New) A method for processing video data, the method comprising:

receiving a video image by a video scaling engine;

determining whether the video scaling engine requires less memory space to scale the video image before writing the video image to memory or after reading the video image from the memory;

scaling the received video image based on the determination;

if the video scaling engine requires less memory space to scale the video image before writing the video image to the memory:

scaling the video image in the video scaling engine using a video input clock of the video scaling engine to generate a first scaled video image;

writing the first scaled video image to the memory;

reading the first scaled video image from the memory; and

outputting the first scaled video image; and

if the video scaling engine requires less memory space to scale the video image after reading the video image from the memory:

writing the video image to the memory prior to scaling;

reading the video image from the memory;

scaling the video image in the video scaling engine using a display output clock of the video scaling engine to generate a second scaled video image;

outputting the second scaled video image; and

blending the second scaled video image with a graphics image to generate a blended video and graphics image

54. (New) A method for processing video data, the method comprising:

receiving a video image by a video scaling engine;

determining whether the video scaling engine requires less memory bandwidth to scale the video image before writing the video image to memory or after reading the video image from the memory;

scaling the received video image based on the determination;

if the video scaling engine requires less memory bandwidth to scale the video image before writing the video image to the memory:

scaling the video image in the video scaling engine using a video input clock of the video scaling engine to generate a first scaled video image;

writing the first scaled video image to the memory;

reading the first scaled video image from the memory; and

outputting the first scaled video image; and

if the video scaling engine requires less memory bandwidth to scale the video image after reading the video image from the memory:

writing the video image to the memory prior to scaling;

reading the video image from the memory;

scaling the video image in the video scaling engine using a display output clock of the video scaling engine to generate a second scaled video image; and

outputting the second scaled video image, wherein scaling the video image using the display output clock comprises upscaling the video image.

55. (New) A method for processing video data, the method comprising:

receiving a video image by a video scaling engine;

determining whether the video scaling engine requires less memory bandwidth to scale the video image before writing the video image to memory or after reading the video image from the memory;

scaling the received video image based on the determination;

if the video scaling engine requires less memory bandwidth to scale the video image before writing the video image to the memory:

scaling the video image in the video scaling engine using a video input clock of the video scaling engine to generate a first scaled video image;

writing the first scaled video image to the memory;

reading the first scaled video image from the memory;

outputting the first scaled video image; and

blending the first scaled video image with a graphics image to generate a blended video and graphics image.

56. (New) A method for processing video data, the method comprising:

receiving a video image by a video scaling engine;

determining whether the video scaling engine requires less memory bandwidth to scale the video image before writing the video image to memory or after reading the video image from the memory;

scaling the received video image based on the determination;

if the video scaling engine requires less memory bandwidth to scale the video image before writing the video image to the memory:

scaling the video image in the video scaling engine using a video input clock of the video scaling engine to generate a first scaled video image;

writing the first scaled video image to the memory;

reading the first scaled video image from the memory; and

outputting the first scaled video image; and

if the video scaling engine requires less memory bandwidth to scale the video image after reading the video image from the memory:

writing the video image to the memory prior to scaling;

reading the video image from the memory;

scaling the video image in the video scaling engine using a display output clock of the video scaling engine to generate a second scaled video image;

outputting the second scaled video image; and

blending the second scaled video image with a graphics image to generate a blended video and graphics image.

57. (New) A video scaler, comprising:

a scaler engine capable of both downscaling a video image to generate a first scaled video image and upscaling the video image to generate a second scaled video image, the scaler engine using a clock selected between a video

input clock and a display output clock, and the video image received via an input of the video scaler;

a memory capable of storing the video image or the first scaled video image; and

one or both of circuitry and/or code that determines whether the video image is to be downscaled or upscaled, wherein the scaler engine comprises a horizontal scaler and a vertical scaler, and wherein at least one of the horizontal scaler and the vertical scaler comprises a programmable filter.